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STRUGGLING TO TARGET: AIRPOWER'S HISTORICAL

CHALLENGE CONTINUES

by

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Preface

Targeting challenges and problems have always captivated my interest. As an intelligence officer, I started out as Chief of Systems for a targeting organization. I then served as an F-111F and F-15E squadron intelligence officer. Later, I held positions as the Chief of Targets and then Flight Commander for theater missile defense attack operations and time critical targeting at the Air Operations Center at 7th Air Force. In each case, I assessed that the resources and commitment to this fundamental operational art element were limiting factors. I saw this to be particularly significant in that the history of airpower, and indeed its very effectiveness, represents a struggle to target.

I began this research effort in order to expand my thinking and further my insight into targeting. I recognized that I had a tremendous amount to learn. My aim was to examine targeting from the perspective of theory, doctrine and practice in an effort to assess how well the Air Force has incorporated the concepts of effects-based targeting into its targeting infrastructure. My hope is that this paper provides readers with an insight into the challenges surrounding targeting and the role it plays in the effective application of airpower.

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Abstract

This paper examines the evolution of targeting and asks how effectively has the U.S. Air Force incorporated targeting into its theory, doctrine and infrastructure underpinning practice. To answer this question, I begin by defining targeting. The objective is to emphasize targeting's pivotal role in the application of aerospace power.

The paper focuses on fixed targeting. Mobile targeting is important, yet focuses primarily on fielded forces rather than the classical centers of gravity (COG): leadership, organic essentials, infrastructure and population, which are influenced through strategic attack, counter-information, and space, airpower functions that depend on fixed targeting.

Following a brief look at theory, the paper examines historical targeting practices from WW I to Operation Allied Force to determine how effectively the Air Force incorporated targeting into practice. The paper then assesses how effectively the U.S. Air Force has incorporated the targeting discipline into its current doctrine and infrastructure.

The last chapter examines the potential implications in order to answer the "so what" associated with the paper's findings. The conclusion reached is Air Force targeting suffers from a lack of vision, doctrine and the requisite infrastructure underpinning practice that represents a source of operational risk to the effective employment of airpower.

Chapter 1

Introduction: New Technology, Old Challenges

In essence, Air Power is targeting, targeting is intelligence, and intelligence is analyzing the effects of air operations.

—Colonel Phillip S. Meilinger

Spectacular images of precision-guided munitions as they unerringly, or so perceived, found their way to the target, vividly portray airpower at the dawn of the third millennium. More significantly, these images reveal an increasingly precise and lethal form of airpower. Now, more than ever, airpower is capable of inducing specific effects that span the tactical to strategic spectrum.

Two operational art elements underpin this transformation toward an increasingly lethal and effective form of airpower. The first is technological advance and the advent of precision-guided munitions and stealth.   The second and less evident element underpinning airpower effectiveness is targeting.[1] According to Larry Weaver and Robert Pollock's article, "Campaign Planning for the 21st Century," targeting is the element at the very heart of operational art.[2] The focus of this paper is on the health of this vital operational art element, specifically fixed targeting.

This paper examines the hypothesis that targeting represents a weak link in the effective application of airpower. The objective is to examine the evolution of targeting

and determine how effectively has the U.S. Air Force incorporated the discipline of targeting into its vision, doctrine and infrastructure underpinning practice.

The Contextual Significance

In short, the historical struggle for airpower effectiveness represents a struggle to target. Today, the greatest airpower challenge remains the ability to target the enemy. Gen George C. McDonald, former USAF director of intelligence, captured the challenge well stating, "target intelligence is the basic requirement because a Strategic Air Force is nothing more than a collection of airplanes unless it has a clear conception of what to use its planes against."[3] McDonald's words echo the original airpower theorists such as Douhet, Mitchell, Trenchard and the Air Corps Tactical School (ACTS) graduates.

These theorists and the practitioners who followed emphasized and struggled with the challenge to target. According to Col Philip S. Meilinger, Douhet was probably the first to realize that the key to airpower was targeting.[4] Similarly, the Air Corps Tactical School theorists posed two target-centric questions concerning the effective application of airpower. What are the vital elements of an adversary's power? Second, how can airpower influence those vital elements?[5] These questions highlight targeting as the critical hub upon, which the effective application of airpower revolves and also emphasizes that early airpower theorists considered destruction as a means to attain effects and not as an end in itself. How well have we addressed this old challenge to target? Finally, what are the implications for airpower employment?

Road Map

To answer these questions, I begin by defining targeting as an analytic process at the heart of aerospace power. Targeting translates strategic and operational objectives into strategic and operational effects to achieve political and military objectives. As such, targeting has always been effects-based. The objective of this tutorial is to emphasize targeting's pivotal role in the application of aerospace power.

In order to narrow the scope of the paper, the focus is on fixed targeting. Mobile/time critical targeting is important, yet focuses primarily on fielded forces rather than the classical centers of gravity (COG) such as leadership, organic essentials, infrastructure and population. These are all elements of a modern society that are typically fixed and vulnerable to strategic attack. A mobile targeting emphasis works if you expect your future enemies' COG to be his fielded forces. History has shown that this is not always the case. In addition, a fielded force emphasis tends to handy-cap one of airpower's greatest strengths; its ability to induce effects that span the tactical to strategic spectrum.

Following this brief look at theory, the paper examines historical practice up to the present to determine how effectively the Air Force has incorporated targeting into the practice of airpower employment. The objective is to identify targeting themes, trends and shortfalls affecting the application of airpower by examining the targeting lessons from the World Wars, Korea, Vietnam, Desert Storm and Operation Allied Force.

Building on this historical examination, the paper then assesses how effectively the U.S. Air Force has incorporated the discipline of targeting into its current doctrine and infrastructure. The conclusion reached is that the Air Force commitment to this vital

operational art element continues to lack direction and falls short in the requisite infrastructure underpinning effective practice.

The last chapter examines the potential implications of the findings within the context of emerging global trends and operational concepts. The aim is to answer the "so what" associated with the paper's findings. The conclusion reached is targeting is a weak link in the effective employment of airpower that represents a source of operational risk to the effective employment of airpower. With the road map laid out, let us begin by defining targeting.

Notes

[1] Larry A. Weaver and Robert D. Pollock, "Campaign Planning for the 21st Century," in *Airpower Studies Coursebook*, ed. Lt Colonel Anthony C. Cain, Dr. Doug Peifer, Llewellyn A. Lamar et al. (Maxwell AFB, Ala.: Air Command and Staff College, AY 2002), 9-10. The authors identify logistics, technology, information, deception, targeting and measuring success as the five operational art elements of campaign planning. They represent the link between the broad strategic plan and concrete targeting required for the operational-level master air attack plan.

[2] Ibid., 11.

[3] Cited in John Glock. "The Evolution of Air Force Targeting," *Aerospace Power Journal* 8, no.3, (Fall 1994): 16.

[4] Philip S. Meilinger (Colonel, USAF), "Giulio Douhet and the Origins of Airpower Theory," in *The Paths of Heaven: The Evolution of Airpower Theory*, ed. Philip S. Meilinger (Maxwell AFB, Ala.: Air University Press, 1997), 11.

[5] Howard B. Belote (Major, USAF), "Warden and the Air Corps Tactical School What Goes Around Comes Around," in *Airpower Studies Coursebook*, ed. Lt Colonel Anthony C. Cain, Dr. Doug Peifer, Llewellyn A. Lamar et al. (Maxwell AFB, Ala.: Air Command and Staff College, AY 2002), 338.

Chapter 2

Aerospace Targeting: What is it?

The choice of enemy targets is the most delicate operation of aerial warfare.

—Giulio Douhet

What is targeting? One would think you could look this up in the glossary of Air Force Doctrine Document (AFDD) 1 or 2-1. Unfortunately, there is no definition provided. In fact, AFDD 2-1 *Air Warfare* does not even define targeting within the planning or execution chapters. So what is targeting?

Simply put, targeting is identifying and influencing an adversary's vital centers of gravity, in the most efficient manner, to induce specific effects supporting the commander's campaign objectives. In this respect, targeting translates strategic and operational objectives into strategic and operational effects. Targeting has never been about the mere destruction of targets. Rather, destruction is only one effect within a range of desired outcomes.[1]

Targeting uses lethal and non-lethal means to obtain direct effects against targets in order to achieve direct and indirect effects at the operational and strategic levels. The goal is to attain control over the systems that underpin an adversary's power and influence.[2] In turn, control enables us to compel an adversary to act in a manner that is in

accordance with our objectives.[3] Viewed from this perspective, targeting involves analyzing causality mechanisms and their effects.

Targeting Defines Causal Mechanisms and Effects

The concept of causal mechanisms involves understanding cause and effect relationships. An example of this concept is direct and indirect effects. Direct effects are immediate. A direct effect results from actions with no intervening effect or mechanism between the original act and the associated outcome.[4] For example, the direct outcome of destroying a bridge is a severed transportation route.

In contrast, an indirect effect is an outcome created via an intermediate effect or mechanism. These effects can be physical or psychological.[5] Indirect effects are often delayed outcomes that can be difficult to recognize. For example, the indirect effect of destroying a bridge is that the bridge may contain fiber optic cables that support a number of adversary command, control and communications functions. The bridge may also support sewage pipes that are now dumping sewage into the river below creating an environmental effect. Finally, the bridge may have supported a fuel pipeline vital to front-line forces. In time, the severed pipeline will restrict the movement of fielded forces. Thus, indirect effects not only have secondary order effects but also may lead to third, fourth, and higher order effects. Higher order effects can be difficult to assess and may act positively or negatively upon campaign objectives.

In summary, targeting is a discipline that is concerned with causal mechanisms and their effects. As such, targeting underpins airpower strategy in that it applies the

concepts of causality and effects in order to link ends, ways and means. How does this work in the targeting process?

Aerospace Strategy and the Targeting Process

Strategy is a decision-making process connecting the ends (objectives) sought with the ways (courses of action) and means (resources) of achieving those ends.[6] Similarly, the targeting discipline is a decision-making process that connects the ends sought with the ways (direct and indirect effects) and means (tools of influence) of achieving those ends. As such, targeting underpins aerospace strategy implementation. The targeting process is a six-step iterative process or cycle starting with objectives and guidance derivation, then target analysis/development, weaponeering, force application, execution, and combat assessment.[7] Let us examine each step starting with objectives.

Targeting begins with an end state in mind and a broad concept of how to reach that end state as defined by the commander's objectives and guidance. The Joint Force Air Component Commander's (JFACC) objectives driving the air campaign are derived from theater level objectives and intent. Theater objectives are in-turn derived from national level objectives. This strategy to task formulation process ensures unity of command and action within the joint force.

Next, the target analysis/development and weaponeering steps of the targeting cycle devise the ways and means to create the desired operational and strategic level effects necessary to meet campaign objectives. Target analysis/development identifies target systems, their components and interrelationships. The aim of target development and weaponeering is to determine the best way to influence vital systems to achieve the

desired effect. The output is a prioritized, effects-based target list linked to lethal and non-lethal means.

The fourth step of the targeting process, force application, uses the information generated above to determine the best force to implement the targeting course of action.[8] Specifically, the force application step synergistically orchestrates the weapon systems, intelligence, surveillance and reconnaissance (ISR) assets and other supporting assets in time and space to achieve the objectives. The Air Tasking Order captures the overall plan, which the units execute; the fifth step in the targeting cycle.

The sixth and final step in the targeting cycle is combat assessment. Combat assessment (CA) evaluates performance based on measures of effectiveness. As T. W. Beagle writes in his thesis, "Effects-Based Targeting: Another Empty Promise?," mission success is more than just a tally of sorties launched and weapons delivered. "Every strike prompts a series of questions such as—was the target hit? If so, did hitting the target achieve the desired effects and, if so, did the desired effects meet the stated objective?"[9] Measures of effectiveness are those metrics, we believe, provide measurable and meaningful insight into gauging the vector and velocity of our strategy's progress. The output of CA should be an assessment of delivery results, higher order effects, and strategy effectiveness.[10]   This assessment process in-turn drives strategy modifications, priorities, force employment, and munitions selection/development.

Summary

In summary, the discipline of targeting underpins air campaign strategy implementation by linking ends, ways, and means. In addition, it provides a feedback-

loop that informs strategy development, course of action selection and employment of

resources. Failures or shortfalls along any portion of this process can cause an air

campaign to lose focus of the objectives sought and or reduce effectiveness. A well-oiled

and robust targeting doctrine and infrastructure are thus vital to effective airpower.

Having defined targeting conceptually and described the critical importance of

targeting we turn to the central question. How effectively have we incorporated targeting

into our practice and infrastructure? For that answer, we first turn to history as a means

of informing the present.

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Notes

[1] T.W. Beagle, "Effects-Based Targeting: Another Empty Promise?" (Thesis, Air Force School of Advanced Airpower Studies), 5.

[2] David A. Deptula, "Effects Based Operations: Change in the Nature of Warfare," (Arlington, Va.: Aerospace Education Foundation, 2001), 6.

[3] Beagle, 5.

[4] Air Force Doctrine Document (AFDD) 2-1, *Air Warfare*, 22 January 2000, 106.

[5] Ibid., 107.

[6] During my International Relations course at Air Command and Staff College, I began to conceptualize strategy as a decision-making process that links the ends (objectives) sought with the ways (courses of action) and means (resources) to achieve those ends.

[7] Air Force Pamphlet (AFP) 14-210. *USAF Intelligence Targeting Guide*, 1 February 1998, 1.6.3.

[8] AFP 14-210, 1.6.3.4.

[9] Beagle, 13.

[10] Ibid., 14.

Chapter 3

Targeting: A History of Lessons Recorded

The emphasis on history is important because there appears to be little learning from experience. The same mistakes are made recurrently, despite the postmortems [...]Avoid the fate of earlier victims.

—Richard K. Betts

Since its infancy, airpower's challenge has been its ability to target effectively. Giulio Douhet knew this well cautioning "The choice of enemy targets…is the most delicate operation of aerial warfare…"[1] The following examines past targeting challenges influencing the effective application of airpower. The objective is to identify targeting themes, shortfalls and trends by examining targeting after World War I through World War II, Korea, Vietnam, Operation Desert Storm and Operation Allied Force. This historical approach is sound because it reveals a continuum of lessons recorded, yet not learned that will continue to challenge airpower in the future.

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The World Wars

Since World War I, airpower has struggled to identify targets based on operational objectives. The World War I Bombing Survey recommended the careful analysis of enemy industrial systems and their interdependencies.[2] The aim was to

identify and target critical elements in order to cause the greatest detriment to the enemy's military capability. Another crucial lesson recorded was the need for an air intelligence organization staffed by trained target intelligence personnel. Following World War I, Gen William "Billy" Mitchell identified the need for intelligence officers "to compile and keep available…all information of value in the preparation of a bombing mission."[3] Mitchell even went as far as to specify the need for photo intelligence archives, charts and other intelligence required for targeting.[4]

During the interwar period, the Air Corps Tactical School (ACTS) while working to mature the concept of strategic bombing, recognized the vital importance of targeting. The ACTS theorists posed two target centric questions concerning the application of airpower. First, what are the vital elements of an adversary's power? Second, how can airpower influence those vital elements?[5] One of the ACTS theorists, Lt Haywood Hansell, captured the crucial role of targeting in his memoirs stating: "Much of the value of the bombing offensive…would rest on intelligence data and the conclusions planners gleaned from it." Hansell went on to say: "Strategic air intelligence on major world powers would demand an intelligence organization and analytical competence of considerable scope and complexity."[6] Yet by 1940, the Air Corps had a public relations division but still did not possess an intelligence division capable of targeting.[7] Thus from the beginning, a lack of organizational infrastructure challenged effective air targeting.

At the start of World War II, the U.S. Army Air Corps had well-developed airpower theories and an emerging, though untested, doctrine of strategic daylight bombing. In contrast, the infrastructure underpinning targeting science was almost nonexistent. The trained target officers and target materials recommended by Gen

Mitchell following WW I, still did not exist by 1941. General Henry H. (Hap) Arnold recognized this shortfall and established an air intelligence section, A-2.[8]

According to former Captain John Glock in, "The Evolution of Air Force Targeting," the Air Corps took a number of steps in 1942 to correct targeting shortfalls. First, it established the Committee of Operations Analysts (COA), which was responsible for the collection and analysis of information dedicated specifically to target selection.[9] Second, the Air Corps created an air intelligence school and a standardized target database.[10]

In summary, World War II revalidated the lessons of World War I. The United States Strategic Bombing Surveys (USSBS) of World War II recaptured the targeting lessons stating: "The importance of careful selection of targets for air attack is emphasized by…experience."[11] The USSBS further stated, "If a comparable lack of [target] intelligence should exist at the start of a future national emergency, it might prove disastrous." Finally, the survey assessed: "The present shortage of trained and competent intelligence personnel give cause for alarm and requires correction."[12] The Korean War proved the USSBS correct.

The Korean War

The U.S. Air Force despite the lessons of WW II, entered Korea with a total lack of target preparation. Hence, the targeting lessons of the Korean War simply restated the lessons of the world wars. A Far East Air Forces (FEAF) report captured three important lessons. First, FEAF lacked trained intelligence personnel.[13] Second, FEAF did not have an established targeting system. Third, the Korean air campaign planning effort suffered

from a lack of target materials and data. Again, experience emphasized, "…a truly effective targeting program must…be initiated before fighting starts."[14] The latter point is particularly true if airpower expects to deliver decisive effects early in a conflict or war as proposed in the U.S. Air Force "Decisive Halt" concept or "Global Strike" concept.[15]

According to former Capt John Glock's research, the Air Force took a number of steps to put targeting on a positive vector following Korea. First, the Air Force took the lead as the Air Target Materials Program (ATMP) executive agent for the Department of Defense in 1953.[16] Second, the Air Force established the targeting career field in 1954.[17] Unfortunately, these efforts derailed before the Vietnam War.

Vietnam

Vietnam echoed many of the same targeting issues and shortfalls of the previous wars. Why did this occur? First, Secretary of Defense McNamara centralized a large portion of DoD intelligence within the Defense Intelligence Agency (DIA) in 1962.[18] This reorganization transferred responsibility for target analysis and materials production out of the Air Force and into the newly created DIA.[19] What was the impact?

According to Major General George Keegan, 7th Air Force Deputy Chief of Staff for Intelligence, the impact on airpower was negative.

> "I would like to observe that the Air Force long since had lost the ability to plan and support with intelligence, interdiction operations. [T]he mission of targeting was taken away…and passed to the Defense Intelligence Agency, where it simply died…and yet one of the Air Force's principle missions is to impede the flow of logistics into the battlefield"[20]

This marked the start of the Air Force's loss of targeting infrastructure. The early 1990s saw a further loss of Air Force targeting assets to the theater Joint Intelligence Centers.

Second, the Air Force again entered a war without an established targeting organization or the trained personnel upon which to build. Mark Clodfelter in, *The Limits of Air Power,* identifies this intelligence-training shortfall. According to his interviews, 7th Air Force was undermanned and often dispatched intelligence personnel to fighter squadrons without adequate training.[21]

In addition, the Air Force did not have a targeting organization to support in-country targeting. This prompted Military Assistance Command, Vietnam (MACV) to create its own target organization.[22] This in effect limited the Air Force to acting in a fire support role to ground forces.[23] Airpower is more than just aircraft; it is a system of systems designed to induce specific effects. If all you can deliver are the aircraft and not specific effects spanning the tactical-strategic spectrum, you are a branch of the Army. It stands to reason that in order for airpower to be effective, experienced airmen must lead the targeting process in coordination with the other services' inputs.

In summary, the Air Force lacked an established targeting organization. In addition, shortages of trained target personnel, materials, and data handicapped air campaign planning. One positive result of the Vietnam experience was the establishment by the Air Force of the Armed Forces Target Intelligence Training Course that would reap rewards during Desert Storm.[24]

Operation Desert Storm

In contrast to Vietnam, the Air Force entered the Gulf War more prepared than any previous conflict. The Air Force's investment in target intelligence training produced a strong cadre of experienced targeteers. Still there were shortfalls.

First, DIA's Automated Installation Intelligence File (AIIF), the database containing target intelligence, was initially inadequate. This likely stemmed from a Cold War intelligence emphasis on Europe. According to *the Gulf War Air Power Survey Summary Report* (GWAPS), the Iraq section of the AIIF grew by 38% between the invasion of Kuwait and the start of the air campaign.[25] In addition, the list of installations considered viable targets increased by 50% during the same timeframe.[26]

These statistics are only a small part of the targeting puzzle. Target development requires more than just installation names and locations. It requires installation significance, critical elements, and relationships to target sets and target systems. Finally, to attack the target, planners and pilots require target materials that include imagery identifying geographic lead in features and critical points, coordinates, and construction data. This is particularly true for the effective employment of precision guided munitions. Precision weapons require more accurate data to be employed effectively, specifically in the area of imagery for laser-guided weapons. According to GWAPS, the availability of this type of data and particularly target materials (i.e., imagery) was a problem throughout the war.[27]

Organizationally, the targeting effort suffered from highly compartmented planning practices. The secretive nature of the Black Hole planning process effectively degraded communication between operations and intelligence.[28] This is certainly a negative metric given targeting is characterized as the intersection of operations and intelligence. According to Glock, the only formally trained target officer in the Black Hole planning cell, "Those performing target and weapons selection in the Black Hole were not trained in those military occupational specialties."[29] Cooperation is essential to

effects-based operations and the employment of precision weapons, which require an ever-increasing amount of target intelligence for effective employment.

The war also highlighted significant doctrinal and procedural problems associated with CA. According to GWAPS, "The intelligence staffs were not prepared for the enormity of the task [CA], either in numbers of qualified personnel or in established and rehearsed procedures."[30] GWAPS research indicates that it was a long-standing practice to simulate CA during operational level exercises.[31]

Incredibly, Air Force Intelligence's response to these shortfalls following the Gulf War was to eliminate the targeting career field and the Air Force target training course. For two years, the Air Force did not conduct a formal target-training course. In contrast, the Navy took dramatic steps following the war to expand target training. According to Glock, "For the first time since 1918, the Air Force has not taken the lead in a targeting program."[32] This further highlights the lack of commitment and understanding within the Air Force concerning the importance of the targeting discipline to airpower.

In summary, Operation Desert Storm, despite a six-month preparation phase and a strong cadre of targeteers, still experienced significant targeting shortfalls. Again, target intelligence analysis, data and target materials were documented shortfalls. In addition, organizational integration of targeting personnel and planners was compartmented and ad hoc. Moreover, CA was a documented shortfall, apparently caused by not integrating this critical assessment task into exercises. Finally, Desert Storm highlighted the increasing demand for precision target analysis and data. Eight years later, Operation Allied Force would revalidate many of these points.

Operation Allied Force

Targeting during Operation Allied Force (OAF) was a hot political topic and a source of friction within the NATO alliance. In addition, a lack of political objectives and direction complicated the targeting process. Still, OAF recorded many of the same targeting lessons identified in previous wars.

For example, even when the political process stated clear military objectives and allowed targeteers and planners to select targets, target selection required extensive intelligence data, much of which was not readily available.[33] This experience echoes the lessons of earlier practitioners who concluded that target intelligence collection and analysis must begin well before the conflict starts.

Similarly, the organizational structure and processes essential to air campaign planning were initially inadequate. According to a well-placed four-star general, the Combined Air Operations Center (CAOC) was a "pick-up team with ad hoc training."[34] In fact, there was no strategy cell or targeting process at work in the CAOC until after the first month plus of OAF.[35] Without these basic organizational elements, the CAOC could not develop a cohesive targeting strategy or measure its effectiveness.

The *Kosovo After Action Report* identified additional targeting areas for improvement. Specifically, the report called for improvements in federated target development and CA tactics, techniques and procedures.[36] This is an important recommendation given the difficulties of orchestrating a decentralized, multi-agency targeting community. The targeting process requires extensive peacetime preparation and the establishment and testing of organizational structures and standardized processes. You have to think, exercise and improve targeting capabilities on a daily basis.

On the training front, it appears that the CAOC initially suffered from a lack of trained targeteers. The after action report does not mention this, however, discussions with an Air Force Intelligence General officer indicate it was an issue. Specifically, this General officer articulated a plan following OAF to shorten the Air Force targeting course. When asked why, the general stated it was necessary to increase the number of courses in order to increase the pool of targeteers, thus avoiding the availability problem during OAF.[37] The effect most likely would be decreased quality. What is the bottom line of this historical examination?

Summary: Enduring Themes, Shortfalls and Trends

The history of airpower represents a struggle to target. This theme pervades the past eighty years of airpower. Surprisingly, we have repeatedly recorded the same lessons. This trend of lessons recorded, yet not learned or acted upon, represents a weak link in the application of airpower that poses operational risk.

In each of the cases discussed, a common theme was a lack of targeting preparation. For a targeting effort to be effective, it must start before a conflict begins. The full impact of this lack of preparation is not operationally evident, because the nature of the conflicts examined has mitigated the impact of our limited peacetime preparation. In all cases discussed, except Korea, targeting efforts had the luxury of time to prepare. For example, Operation Desert Storm benefited from six months of intense intelligence and target preparation. Likewise, World War II and OAF experienced even longer preparation periods. The luxury of time has hidden the full extent of our targeting

shortfalls. Yet, even with the luxury of time, the previous cases have shown shortfalls in a number of areas ranging from CA to analysis and training.

One reason for this lack of preparation appears to be organizational. The Air Force in most cases did not possess dedicated air operations centers based on well-established organizational structures. The result was a "pick-up team" approach to conducting air campaign planning and execution at the operational level of war. This unsound warfighting practice prevented dedicated daily training and integration of operations and intelligence. This organizational characteristic reflected a traditional Air Force emphasis on the tactical level of war, rather than the operational level. This manifested itself during Korea, Desert Storm and OAF in marginal CA and compartmentalization that led to inadequate communication between planners and intelligence.

Another potential reason for the lack of target preparation is the trend toward joint target analysis, development and materials production. Since the creation of DIA in 1962 and the theater Joint Intelligence Centers (JICs) in the early 1990s, the Air Force has increasingly lost control of the target infrastructure underpinning the application of airpower. Almost all the target analysis, development, and target materials production work is now conducted by these organizations. This is not to imply the Air Force could do a better job but rather highlights the challenges of a decentralized targeting community. In this environment, the Air Force must apply aggressive leadership within this community to obtain the target support crucial to the application of airpower.

On the training front, the Air Force initially led the other services in the development of targeting officers and enlisted personnel. Despite this leadership, it was

not until after Vietnam that a specialized targeting course existed in the Air Force, even though the conflicts before Vietnam all identified target training as a shortfall.   In Desert Storm, the Air Force in large measure conquered the training problem and then inexplicably stopped training targeting specialists for two years. Possible reasons range from saving money to a misplaced perception that the targeting career field added little value given the its relationship to the "Black Hole."

In sum, the history of airpower represents a struggle to target. The information trend shaping future warfare will drive exponential advances in precision. In-turn, this will demand a dramatic increase in precision target intelligence. To meet this challenge, the Air Force must overcome training, organizational, analytic and production shortfalls. The decentralized federated nature of the targeting community demands the Air Force take an aggressive leadership role in shaping, designing and building the future targeting infrastructure upon which it depends. Where do we stand today in this endeavor?

Notes

[1] Quoted in Robert R. Lindsay, "A Critical Appraisal of Target Development," (Master Thesis:, Naval Postgraduate School, June 1993), 16.

[2] "U.S. Bombing Survey," in *The U.S. Air Service in World War I Vol. 4*, ed. Maurer (Maxwell AFB, Ala.: Air Force Historical Research Agency, U.S. Government Printing Office, 1979), 501.

[3] William Mitchell, "Mitchell: Provisional Manual of Operations," in *The U.S. Air Service in World War I Vol. 2*, ed. Maurer (Maxwell AFB, Ala.: Air Force Historical Research Agency, U.S. Government Printing Office, 1979), 279.

[4] Ibid., 279.

[5] Howard B. Belote (Major, USAF), "Warden and the Air Corps Tactical School What Goes Around Comes Around," in *Airpower Studies Coursebook*, ed. Lt Colonel Anthony C. Cain, Dr. Doug Peifer, Llewellyn A. Lamar et al. (Maxwell AFB, Ala.: Air Command and Staff College, AY 2002), 338

[6] Haywood Hansell, The Strategic Air War Against Germany and Japan (Washington, D.C.: Office of Air Force History, 1986), 19.

[7] Ibid., 20.

[8] Robert R. Lindsay, "A Critical Appraisal of Target Development," (Master Thesis:, Naval Postgraduate School, June 1993), 29.

Notes

[9] Cited in Glock, 16.

[10] Ibid.

[11] *The United States Strategic Bombing Surveys (European War) (Pacific War)* (Maxwell AFB, Ala.: Air University Press, 1987) 39

[12] Ibid., 117.

[13] Cited in Glock, 19.

[14] Ibid.

[15] Air Force Doctrine Document (AFDD)1, *Air Force Basic Doctrine*, 1 September 1997, 42. The aim of the "decisive halt" concept is to force the enemy beyond their culminating point through the early and sustained overwhelming application of air and space power. This concept demands a fast serve targeting solution that links ends sought with the ways and means to achieve those ends.

[16] Glock, 19

[17] Ibid.

[18] Ibid.

[19] Ibid.

[20] Quoted in Robert Frank Futrell, Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, vol.2, 1961-1984 (Maxwell AFB, Ala,: Air University, 1989, 304.

[21] Mark Clodfelter, *The Limits of Air Power: The American Bombing of North Vietnam*, (New York, N.Y.: The Free Press, 1989), 131.

[22] Glock, 20.

[23] Ibid., 20.

[24] Ibid., 20.

[25] Thomas A. Keaney and Eliot A. Cohen, Gulf War Air Power Survey [GWAPS] Summary Report (Washington, D.C.: Library of Congress, 1993), 134.

[26] Ibid., 134.

[27] Ibid., 135.

[28] Beagle, 65.

[29] Quoted in Matt Mckeon, "Joint Targeting: What's Still Broke?" (Thesis, School of Advance Airpower Studies, Air University, June 1999), 42.

[30] GWAPS, 139.

[31] Ibid.

[32] Glock, 23.

[33] Beagle, 98.

[34] Cited in T.W. Beagle, 81.

[35] Ibid., 82.

[36] Kosovo / Operation Allied Force After Action Report, Report to Congress, 31 Jan 2000, 53.

[37] The general's name is withheld to comply with the policy of non-attribution.

Chapter 4

Targeting Today: Theory, Doctrine, and Practice

There are no easy solutions to the targeting problems of today; nor will the problems of the future be easier to resolve.

—Air Force Pamphlet 200-17
11 October 1978

Today the Air Force's commitment to the operational art element of targeting continues to fall short. Specifically, Air Force targeting lacks the theory, doctrine and requisite infrastructure underpinning effective practice. A homebuilding analogy helps to understand these deficiencies. In this analogy, theory is the vision of the house one desires to build. This vision is in-turn translated into blueprints (doctrine), and ultimately the reality of the constructed home (practice).[1] How well is the Air Force building the targeting house?

Theory

Theory is a vision that states the principles of a subject and describes a future goal. Currently the Air Force possesses a wealth of descriptive and proscriptive targeting theories and strategies. These range from Douhet, the ACTS theorists, Colonel John Boyd's Observe-Orient-Decide-Act (OODA) loop, and Colonel Warden's five rings.

What is missing is a comprehensive Air Force targeting vision that translates these theories into the doctrine (blueprints) and associated infrastructure underpinning practice (reality).

This lack of strategic targeting vision is evident in the preceding historical analysis. Yet, even today, research failed to find an Air Force targeting vision within the Air Staff and to a lesser extent Air Combat Command.[2] Specifically, the U.S. Air Force does not have a detailed, articulated targeting vision and critical path plan connecting theory to the infrastructure underpinning practice. Infrastructure includes organization, training, tools, and tactics, techniques and procedures. Moreover, this vision should identify emerging contextual challenges (e.g., small diameter munitions, counter anti-access operational concepts, transnational crime/terror). Finally, this vision needs to articulate measures of effectiveness for determining the health of this vital operational art element (e.g., funding, automation goals, target materials production, standards). This lack of vision is evident in Air Force doctrine.

Targeting Doctrine

Doctrine is a statement of the fundamental principles by which military forces guide their actions in support of national objectives.[3] According to AFDD-1, "Air Force doctrine is meant to codify accumulated wisdom and provide a framework for the way we prepare for, plan, and conduct air and space operations."[4] In essence, doctrine is a blueprint reflecting what has typically worked best.

Surprisingly, the Air Force does not possess a doctrine document that articulates what the Air Force believes concerning the discipline of targeting. Nor according to the

Air Force Doctrine Center does it have a plan to develop such a document.[5] Yet, as shown earlier, the discipline of targeting underpins air campaign strategy implementation by linking ends, ways, and means. What are the implications of this doctrinal void?

First, the lack of doctrine deprives airmen of a source of accumulated wisdom, outlining fundamental principles guiding how the Air Force prepares for, plans, and conducts targeting. Consequently, targeting as a discipline is in a fragmented and chaotic state. Today, numerous organizations and communities claim parts of the targeting house, yet no single entity is responsible for integrating the parts into a cohesive structure. The effect is a compromise in airpower effectiveness.

Second, without a published doctrine articulating the wisdom of experience and a framework for identifying vital centers, how to influence those centers, and assess effectiveness, practice will continue to be governed by ad hoc arrangements.[6] This ad hoc, pick-up team approach will lead to operational and strategic decision-making based on intuition and hope rather than critical analysis.[7]

Finally, according to Col Fontenot of the Air Force Doctrine Center, service doctrine should drive joint doctrine.[8] Given the Air Force does not have its own house in order, it is unlikely it will be able to effectively influence joint targeting doctrine. In the next year, the joint community will publish targeting doctrine that may drive our service. This in itself is an indication we are lagging the fight.

In summary, targeting doctrine is nonexistent. In 1940, the Air Corps had a public relations division but did not possess a target intelligence division.[9] In 2002, the Air Force possesses public affairs and legal doctrine documents but still does not possess doctrine articulating its beliefs, wisdom and theories on aerospace targeting which

underpin airpower. What are the higher order effects? If doctrine provides a blueprint, what type of targeting infrastructure have we built underpinning practice?

Practice

Practice embodies the application of operational art.[10] The effective application of the operational art of targeting must rest firmly on a coordinated, robust and well-exercised infrastructure. This infrastructure includes target analysis and materials production, organization, training, tools, and TTPs. In short, the infrastructure underpinning practice is in disrepair despite recent bright spots in organizational reform.

Target Analysis/Production

Today the target analysis and production community is a decentralized federation composed of numerous organizations and agencies responsible for target analysis and target materials production. The organizations include the Joint Staff, DIA, the National Security Agency (NSA), the National Imagery and Mapping Agency (NIMA), the Central Intelligence Agency (CIA), theater JICs and Services. This organizational structure poses an interesting leadership dilemma: who is in charge?

According to an interview with Joint Staff Targets (J-2T) the unified commands are driving the train.[11] According to an interview with JICPAC's Operations Applications Directorate (JICPAC/OA), this is problematic. One impact of this leadership situation is a lack of standardization in target materials production between the unified commands. [12] This becomes an issue when one unified command is operating in a supporting role to another command. In the end, airpower suffers.

Organization

On the organizational front, the Air Force is currently experiencing a reformation, which seeks to correct the pick-up team approach to targeting and air campaign planning. Driving this effort is a new Air Force emphasis on the operational level of war, contrasting with its previous tactical focus. The result is a concerted effort by the Air Force to identify and transform the AOC into a weapon system. This includes efforts to formalize and standardize the AOC structure throughout the Air Force.[13]

Tangible evidence of reform is evident in Air Combat Command's Combined Air Operations Center-X (CAOC-X) initiative. CAOC-X is a test-bed for new AOC systems, concepts and aids in configuration control. This is critical to the development of the standardized AOC organizational structure and tools required to conduct and coordinate operational-level target and air campaign planning essential to wartime success.

Unfortunately, many AOC operations/units still fall directly under MAJCOMs such as PACAF and USAFE. Consequently, these units lead a schizophrenic existence that jumps between a train and equip staff focus and NAF/AOC war planning and fighting functions. This structure may impede the culture shift to a weaponized AOC.

In support of the AOC transformation, Air Force Intelligence is aggressively building a NAF intelligence infrastructure centered on the Distributed Common Ground Station (DCGS) and Air Intelligence Squadron, an organization boasting organic imagery and signals collection, analytic, and targeting functions. Recently designated as weapon systems, the DCGSs' are standardizing their equipment, functions, maintenance activities, manning, mission rates and training along the lines of a flying squadron.

This effort represents insightful leadership. It recognizes the importance of the targeting problem from a dynamic time-critical targeting perspective. Its aim is to build

the required multi-source intelligence infrastructure to find, fix, track, target and assess. The effort seeks to address that segment of the intelligence and targeting challenge under its control, time-critical/dynamic targeting. Unfortunately, it only solves part of the puzzle.

The larger part of the puzzle is leading the national intelligence community to exercise the same sense of urgency about targeting as the Air Force is now advocating.[14] As stated by a senior Air Force Intelligence officer, we have to get the national intelligence community to update the intelligence databases upon which our fixed targeting operations depend.[15] This is where the Air Force needs to apply aggressive leadership in concert with putting its own targeting house in order. This aspect of the targeting challenge is fundamental to the success of airpower.

Training

On the training front, the Air Force has struggled to recover from the total neglect and collapse of its target training infrastructure. As recent as the summer of 2001, the leadership sought to expand the number of intelligence officers who attend the USAF Targeting Course.[16] Unfortunately, the approach initially advocated was to reduce the length of the course to increase the throughput. This mediocrity over excellence approach is not the answer.

As a graduate of the targeting course in 1997, I found the course be a quality product but limited in scope. In a recent Air Staff XOI target training survey, 39 % of the graduates rated the Combat Targeting Course average, while 22% rated the course below average. [17] These are poor metrics, given Air Force Intelligence considers targeting one of its four core competencies.

The answer is not to shorten the course but expand target training in length and intensity. This should include readings and instruction in the various descriptive and proscriptive targeting theories; effects based concepts, and doctrinal readings. Finally, the course must cover the process, analytical skills, tools, and tactics, techniques and procedures of the targeting discipline to include exercises and realistic computer-based modeling applications.

Tools

Target automation tools are significantly lagging the fight in the Air Force. In early 2001, the Air Force did not have a targeting application in place to fully support the targeting process. Systems are required that support target analysis, development, weaponeering, force application and CA. This must be an integrated tool. During almost two years in Korea, which ended in 1999, I was appalled by the lack of tools for conducting these vital targeting functions.

Specifically, as Chief of Targets, I initially had no way of measuring the effectiveness or health of my troops target development work. For example, I could not access a target analyst's target set in order to gauge the health of the set by examining the status of target material/imagery currency, precision points, collection requirements, date last reviewed and associated effects mechanisms. Nor could I determine how much progress an individual analyst made over time as a means of assessing the quality and quantity of their work. The answer was and often is in-house software development, which is not an efficient solution.

Bottom line, target automation is behind the power curve. Even the recent but late arrival of the Joint Targeting Toolbox addresses only a fraction of the requirements in this area. This targeting automation shortfall is the mark of a second rate air force.

TTPs

Finally, TTPs are another weak link in the targeting infrastructure underpinning effective practice. Currently the Air Force does not possess an Air Force level targeting TTP. The Joint Community, which contains the vast portion of the targeting infrastructure, is also without a targeting TTP. In a federated, multi-agency system, coordination of techniques and procedures is essential. Lack of effective CA is a prime example of the need for this level of coordination and standardization.

According to a pilot serving a career broadening tour in intelligence, no matter where I fly the standards are the same, not true for intelligence. It appears to be different in every command.[18] Within the Air Force this is a problem as well. As the AOC is weaponized, standard TTPs will need to be in place upon which to evaluate an AOCs performance.

Findings and Conclusions

This paper set out to examine how effectively the Air Force has incorporated the discipline of targeting into its doctrine and infrastructure underpinning practice. In general, the history of airpower represents a struggle to target. This struggle continues today and is evident in the Air Force's marginal commitment to a cohesive targeting theory, doctrine and practice.

On the theoretical level, the Air Force lacks a strategic targeting vision that articulates a critical path plan connecting the numerous proscriptive and descriptive target theories to the infrastructure underpinning practice. Historically this shortfall in vision manifested itself in a lack of target preparation. As shown a targeting effort must start before a conflict for it to be effective. Vision is crucial.

Air Force Doctrine reflects this lack of vision. Without a concerted effort by the Air Force to codify the wisdom and frameworks for identifying vital centers, how to influence those centers and assess effectiveness, practice will likely be governed by ad hoc arrangements. This approach will continue to drive operational and strategic decision-making based on intuition and hope rather than critical analysis. The higher order effects of building without a formalized blueprint is the current disjointed infrastructure supporting practice.

The effective application of the operational art of targeting demands a coordinated, robust and well-exercised infrastructure, an infrastructure that is now in need of renovation. To address the shortfalls, the Air Force must put its own targeting house in order. Only then can the Air Force take an aggressive leadership role in the larger community. The good news is the Air Force has control over parts of the solution, especially in the area of organizational reform, training, time-critical targeting and to a lesser degree automation tools. Finally, the Air Force must aggressively lead the joint and national intelligence community to energize joint and national target analysis, production efforts and funding.

Notes

[1] Joe Reynolds, "How to Study Things…Like Airpower," in *Airpower Studies Coursebook*, ed. Lt Colonel Anthony C. Cain, Dr. Doug Peifer, Llewellyn A. Lamar et al. (Maxwell AFB, Ala.: Air Command and Staff College, AY 2002), 2.

[2] This research effort involved e-mails and telephone conversations with numerous Air Staff field grade officers, a DIA civilian with J-2T experience and two ACC field grade targeting officer. Many of the individuals I personally know others were recommended to me as contacts. In the end, no one could point me to an Air Force targeting vision. In essence, a road map to the future based on a strategy to task analysis of the Air Force's requirements detailing doctrinal and infrastructure improvements within the context of operational airpower concepts, such as the Global Strike Task Force.

[3] AFDD 1, 81.

[4] Ibid., 1.

[5] Col (s)Warren Fontenot, "Air Force Doctrine Update," lecture, Air Command and Staff College, Maxwell AFB, Al., 30 January 2002.

[6] Beagle, 105.

[7] Ibid.

[8] Fontenot, lecture.

[9] Hansell, 20.

[10] Reynolds, 3.

[11] Alison Shearer, former J-2T staff member, interviewed by the author, Nov-Dec 01.

[12] Lt Col Dave Stilwell, JICPAC/OA, interviewed by the author, Oct 01-Jan 02.

[13] Lt Col Osborne, memorandum for record, subject: Trip Report, [ACC] NAF/IN Conference/Roundtable, 30 April 01. This trip report outlines a plan of action to support General Jumper's Global Strike Task Force concept from and intelligence perspective. It outlines ACC/IN's intent based on guidance from above to weaponize the intel elements of the AOC.

[14] Ibid.

[15] Osborne.

[16] Comments by an Air Force Intelligence general officer in a discussion in July of 2001. The general's name is withheld to comply with the policy of non-attribution.

[17] Air Force/XOIRB-T, Air Force Targeting Survey Results, 2000.

[18] Stilwell, interview.

Chapter 5

Implications for Airpower

Victory smiles upon those who anticipate the changes of war, not upon those who wait to adapt themselves after the change occurs.

—Guilio Douhet

What are the operational implications? Today, the implications of a marginal or merely satisfactory targeting infrastructure upon airpower employment are even more significant than in the past. This condition stems from three trends. The first is the changing nature of the global security environment. The second is the proliferation of advanced technology and weapons. The third trend is the maturation of potential enemy operational concepts based on anti-access strategies.

Following the Cold War, the global security environment has become much more dynamic. In the past, we were concerned with a few players in a relatively stable global environment. In that environment, we could focus our targeting efforts. Today, there are numerous players and threats. The players confronting us range from major powers and rogue states to transnational terrorists and criminal organizations. Consequently, the targeting challenge has increased in both scope and complexity.

Second, the proliferation of technology has allowed potential adversaries access to advanced weapons and information that vastly expands the scope, the timing and tempo of threat capabilities. In this environment, the classic phases of conflict--deter,

deploy, halt, build-up, engage, and reconstitute--are now compressed. The U.S. will no longer have the luxury of time to address operational targeting shortfalls on the fly.

Finally, potential enemies are leveraging technology to employ anti-access strategies that threaten U.S. freedom from attack and freedom to act in a given region. These strategies employ weapons such as mobile medium range ballistic missiles, anti-ship missiles, UAVs, information warfare and advanced surface to air missile systems.

The implications for targeting are two fold. First, there is an increased emphasis and requirement to conduct mobile targeting to halt advancing enemy forces. Second, the proliferation of threats ranging from major powers and rogue states to transnational criminal and terrorist organizations vastly complicates the scope and complexity of the fixed targeting problem.

In this environment, airpower must be prepared to dominate the time dimension by rapidly creating physical and psychological shock. We must quickly gain access to a given region to facilitate the delivery of operational effects in order to thwart an anti-access strategy and obtain operational and strategic effects.

This time theme is evident within the current Air Force doctrinal and operational concepts of Decisive Halt and the Global Strike Task Force (GSTF). The success of these concepts rest firmly upon a robust, well-exercised, fixed targeting infrastructure grounded in theory and doctrine. Prior targeting preparation is crucial to success. No longer can we afford the luxury of time associated with extended deployment and buildup phases.

The Air Force response to this challenge has been a concerted effort to improve mobile/time-critical targeting. The Air Force is well suited to address this techno-centric

targeting challenge given its technically oriented culture. Fortunately, the Air Force appears to recognize the importance of organizational reform in addressing the targeting problem. This is evident in the Air Force's initiative to "weaponize" the AOC and supporting intelligence squadrons so critical to effective mobile targeting. Yet, mobile targeting is only part of the targeting challenge.

Mobile targeting focuses primarily on fielded forces rather than the classical centers of gravity (COG): leadership, organic essentials, infrastructure and population. These are all elements of a modern society or organization that are typically fixed and subject to influence through strategic attack. Even mobile systems themselves are often dependent on a fixed infrastructure that includes support facilities, energy systems, command, control, intelligence, and movement networks.

In conclusion, airpower's ability to induce effects that span the tactical to strategic spectrum demands a robust targeting infrastructure grounded in an Air Force targeting vision, and doctrine. Currently, the Air Force lacks an overarching targeting vision and blueprint to construct this reality. Without a targeting vision, the doctrinal blueprint, and vital infrastructure underpinning practice, airpower targeting will likely continue to be a major source of operational risk. This level of risk may cause airpower to fail to reach the full potential envisioned by its leaders. As history has taught us, a truly effective targeting program must begin before the fighting starts. In contrast to early airpower history, the current focal point for improving effects-based airpower employment lies largely outside the realm of technology.[1] Rather, technology is one of several operational art elements that link the broad strategy to the concrete targeting vital to effective airpower employment. Fixed targeting requires prior planning based on a robust

infrastructure doctrine and infrastructure. This is especially true in the 21st century where

conflict is a come as you are affair.

Notes

[1] Beagle, 104.

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